



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: : Docket No.: PST6148US1/2159
KARIN BERGSTROM, et al. :
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Serial No: 10/642,882 : Group Art Unit: 1621
:
Filing Date: August 18, 2003 : Examiner: Keys
:
Title: AN ORTHO ESTER-BASED :
SURFACTANT, ITS PREPARATION AND USE :

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. § 1.132

Sir:

I, Per-Erik Hellberg do hereby declare and say that:

1. I am one of the inventors of the above-captioned application;
2. That I have a M. Sc. In chemical Engineering and a degree of Licentiate of Engineering in Chemistry both from Chalmers University of Technology, Gothenburg, Sweden.
3. That I am an R&D specialist working on projects related to new types of surfactants and their uses.
4. That the following experimentation was prepared by me or under my direct supervision.

Complementary tests with ortho ester surfactants having $n_2=0$:

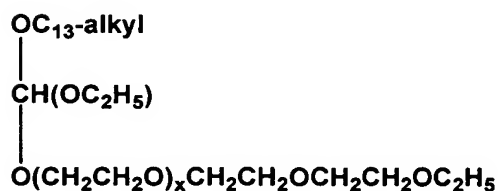
In order to demonstrate the superior surface activity over the references also for ortho ester according to the invention where $n_2=0$ test have been carried out with the following compounds:

A : Based on a pure alkyl chain with in average C13 as chainlength

B : Based on a 2-propylheptyl (C10) alkyl chain

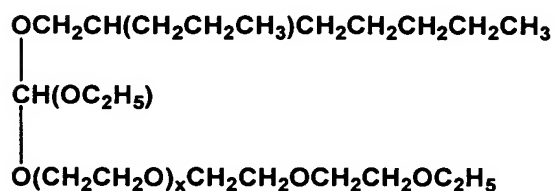
C : Based on a pure alkyl chain containing straight alkyl chains in the range from C12-C16

A



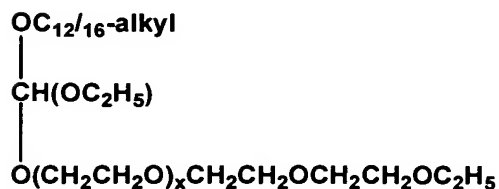
$x=4$

B



$x=2$

C



$x=6$

1) Static Surface Tension

Method

Surface tensions were recorded using a KSV Sigma 70 tensiometer (KSV Instruments LDT, Helsinki, Finland) equipped with a du Noüy ring. Surfactant concentrations were 0.1 % (1 g/L) in pH 8 buffer solution (P-H TAMM Laboratorier AB, Uppsala, Sweden) in order to avoid any hydrolysis during the measurement. The buffer solution had a surface tension approximately the same as pure water (72 nN/m).

Results - Table 1

Product	Surface Tension
	(mN/m)
A	27.5
B	30.0
C	29.8

As the data clearly demonstrate, all of these products of the invention have a substantially lower surface values than the products of Askew et al. (See First Declaration).

2) Wetting according to Draves

Method

The wetting capability is determined by examination of the time consumed for wetting a skein of yarn when the concentration of the solution is 1 g surfactant/liter. The skein is double-folded and equipped with a hook and a 40 g sinker of lead. Time from immersion until the lower part of the hook is on level with the upper part of the sinker is measured.

Ref. ASTM 02281

Results

Table 4

Product	Wetting time (s)
A	22
B	41
C	119

The wetting time should be as short as possible, demonstrating the ability of the surfactant to rapidly interact with the yarn surface. The above compounds of the invention clearly demonstrate significant and unexpectedly superior wetting capacity, especially when compared to the products of Askew, which have virtually no wetting capacity. (See First Declaration where the compounds of Askew et al have wetting times of greater than 600 seconds.)

Analysis of the test results and data clearly lead one to conclude that the compounds of the present invention where $n_2=0$ are unexpectedly superior in the parameters tested, i.e., they are superior surfactants compared to the compounds of Askew et al., which do not have good surface activity.

The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 Title 18 of the United States Codes and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Date: 2005-04-27


PER-ERIK HELLBERG